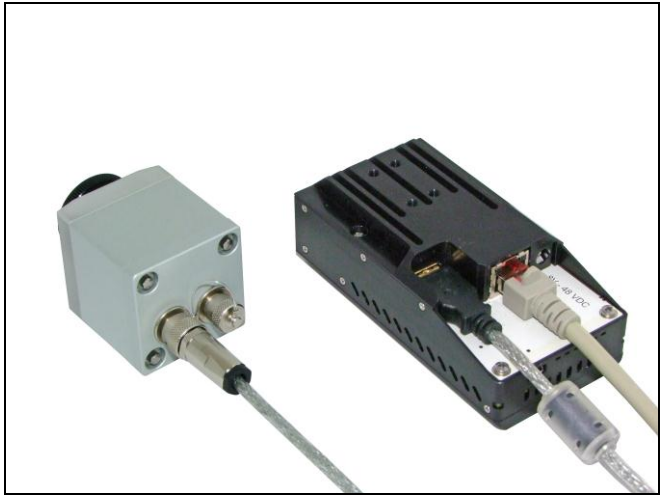
optris® PI NetBox

Mini PC for optris PI series



Operators manual

optris
infrared thermometers

CE-Conformity

The product complies with the following standards:

EMC:	EN 61326-1:2006 (Basic requirements) EN 61326-2-3:2006
Safety Regulations:	EN 61010-1:2001

The product accomplishes the requirements of the EMC Directive 2004/108/EG and of the Low Voltage Directive 2006/95/EG.

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Read the manual carefully before the initial start-up. The producer reserves the right to change the herein described specifications in case of technical advance of the product. References to other chapters are marked as [► ...].

Warranty

Each single product passes through a quality process. Nevertheless, if failures occur please contact the customer service at once. The warranty period covers 24 months starting on the delivery date. After the warranty is expired the manufacturer guarantees additional 6 months warranty for all repaired or substituted product components. Warranty does not apply to damages, which result from misuse or neglect. The warranty also expires if you open the product. The manufacturer is not liable for consequential damage or in case of a non-intended use of the product.
If a failure occurs during the warranty period the product will be replaced, calibrated or repaired without further charges. The freight costs will be paid by the sender. The manufacturer reserves the right to exchange components of the product instead of repairing it. If the failure results from misuse or neglect the user has to pay for the repair. In that case you may ask for a cost estimate beforehand.

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Description

The optris PI NetBox is a miniaturized PC which expands the optris PI series to a stand-alone solution or which works as a USB to Ethernet converter. This mode generates larger possible distances between process (PI camera) and process control (PC).
The PI NetBox includes a Windows XP Professional operating system that allows the user to install additional software.
The housing of the PI NetBox is made of anodized aluminum – the optional NetBox protection housing supports the usage in industrial environments (IP65/ NEMA-4 rating).

Scope of Supply (Standard version)

- PI NetBox incl. micro SDHC card (8 GB)
- Power supply (100-240 VAC / 24 VDC)
- TV_{out} adapter cable
- Ethernet cable
- USB Rescue stick (2 GB)
- Rail mount adapter
- Operators manual

Scope of Supply (Lightweight version)

- PI NetBox incl. micro SDHC card (8 GB)
- Power supply (100-240 VAC / 24 VDC)
- Power cable (with open ends for direct connection to a Lithium battery)
- Video adapter cable
- Ethernet cable
- USB Rescue stick (2 GB)
- Operators manual

Maintenance

The housing of the NetBox can be cleaned with a soft, humid tissue moistened with water or a water based cleaner.

PLEASE NOTE: Never use cleaning compounds which contain solvents.
Take care that no moisture infiltrates into the housing.

Cautions

Take care that no foreign substances penetrate into the venting slots of the PI NetBox.
In case of problems or questions which may arise when you use the NetBox, please contact our service department.

Please use only the threads in the housing or the supplied rail mount adapter for mechanical installation of the PI NetBox.
Avoid mechanical violence – this may destroy the system (expiry of warranty).

Technical Data

General Specifications

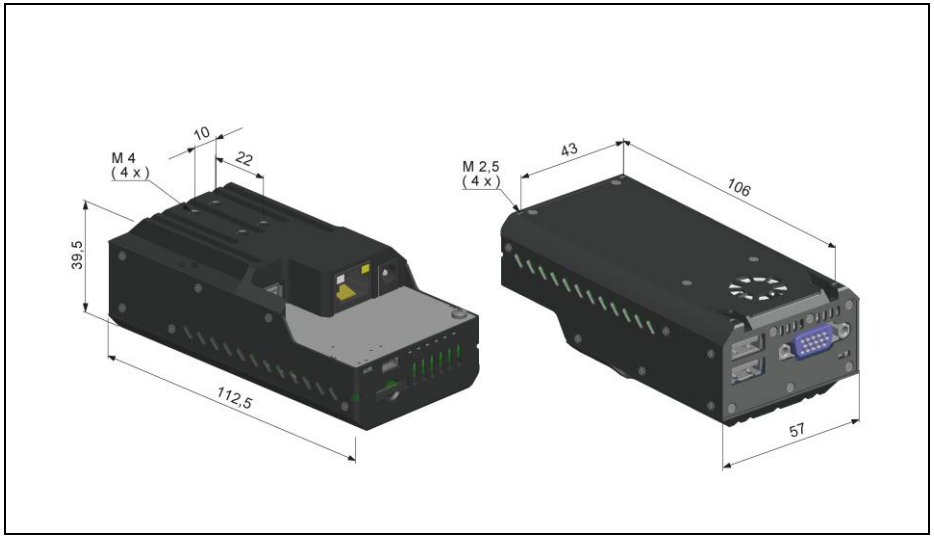
Operating temperature	0...50 °C
Storage temperature	-20...75 °C
Relative humidity	10...95 %, non condensing
Material (housing)	Anodized aluminum
Dimensions	113 mm x 57 mm x 39 mm (L x W x H)
Weight	280 g
Vibration	IEC 68-2-6: 3G, 11 – 200 Hz, any axis
Shock	IEC 68-2-27: 50G, 11 ms, any axis
Operating system	Windows XP Professional

Electrical Specifications

Power supply	8...48 VDC or Power over Ethernet (PoE/ 1000BASE-T)
Power consumption	9,5 W (+ additional 2,5 W for PI camera)
Cooling	passive (active via integrated fan for ambient temperatures > 50 °C
Board	COM Express mini embedded board
Processor	Intel® Atom™ Z530/ 1,6 GHz
ROM	2 GB SSD
RAM	512 MB (DDR2, 533 MHz)
Ports	3x USB 2.0 1x Mini-USB 2.0 (slave mode) VGA/ TV_{out} Ethernet (Gigabit Ethernet)
Extensions	microSDHC card (up to 32 GB)
Additional functions	6x Status LEDs (L1-L6)

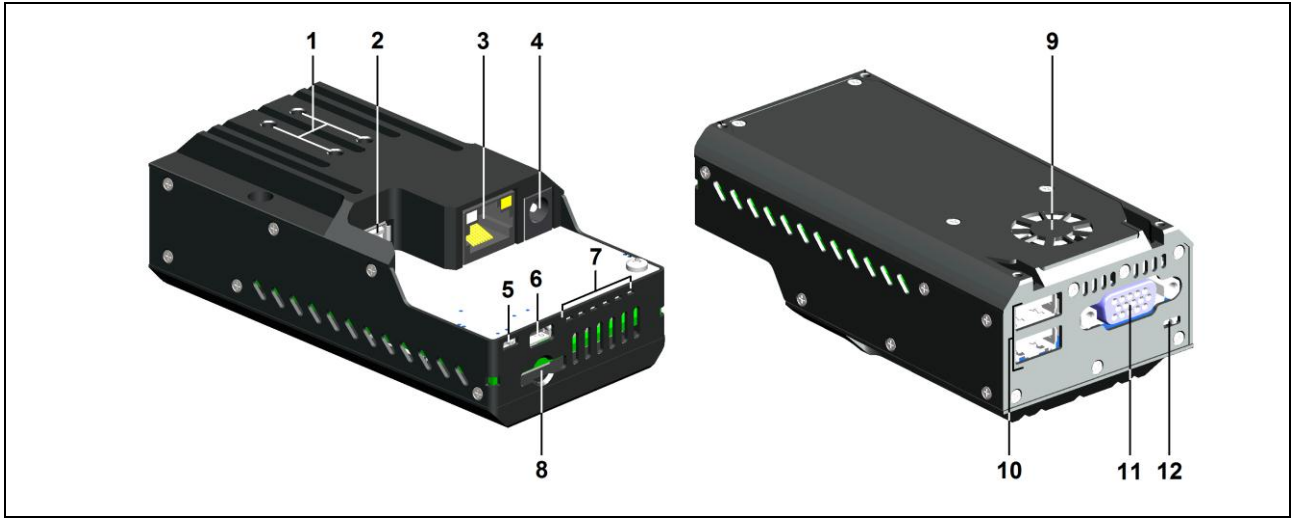
Installation

The PI NetBox can be mounted easily on a DIN rail (TS35) according EN50022 using the supplied rail mount adapter. For this purpose please screw the 4 screws (M4) into the designated holes on the upper side of the NetBox housing. Now you can place the rail mount adapter on the housing and fix it with the 4 nuts.
On the bottom side of the NetBox housing you will find 4 holes M2,5 which also can be used for mounting.



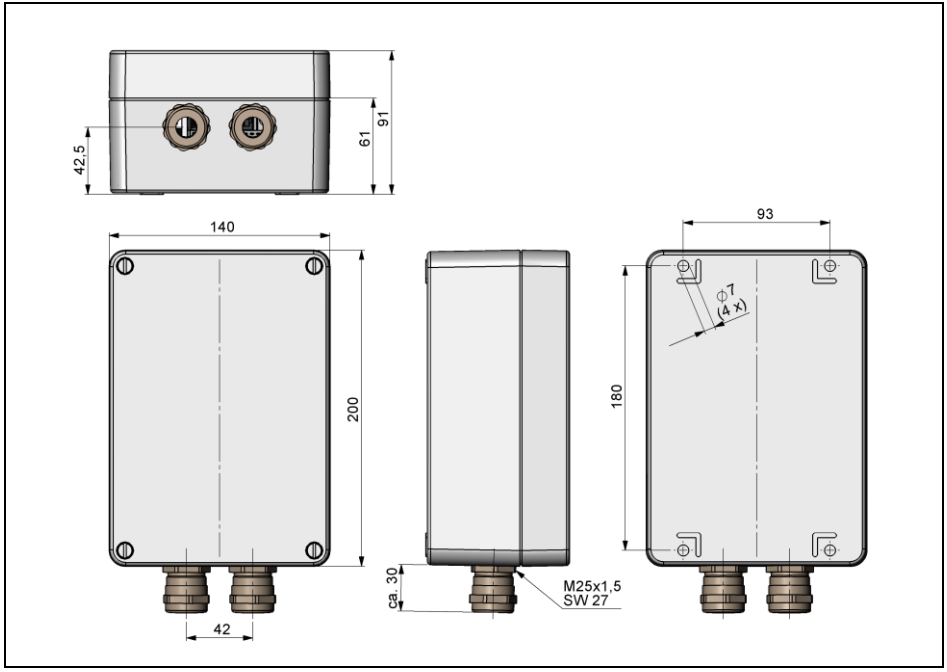
Dimensions PI NetBox

Controls and Connections



1	**Mounting holes for rail mount adapter**	**9**	**Cooling fan**
2	**USB 2.0 connection**	**10**	**2x USB 2.0 connections**
3	**Ethernet connection**	**11**	**VGA-/ TV_{out}-connection**
4	**Power supply connection**	**12**	**Switch VGA/ TV_{out}**
5	**Mode switch (S1/ S2)**		
6	**Mini USB connection (slave mode)**		
7	**Status-LEDs (L1-L6)**		
8	**microSDHC card slot**		

Protective Housing



IP65 Protective housing (Alu die-cast)

Operation

The PI NetBox can be used in three different operation modes:

1. Converter USB – Ethernet with direct connection to a PC (point-to-point connection)
2. Converter USB – Ethernet with connection of a PC via a network or via the internet
3. Stand-alone operation with a PI camera

For powering the NetBox you either can use the supplied power adapter or a suitable industrial power supply with a voltage output between 8 VDC and 48 VDC **[► Technical Data].**
Alternatively the PI NetBox can also be powered via the Ethernet cable (PoE – Power over Ethernet). For this purpose a PoE injector is needed [part#: ACPIPOE].

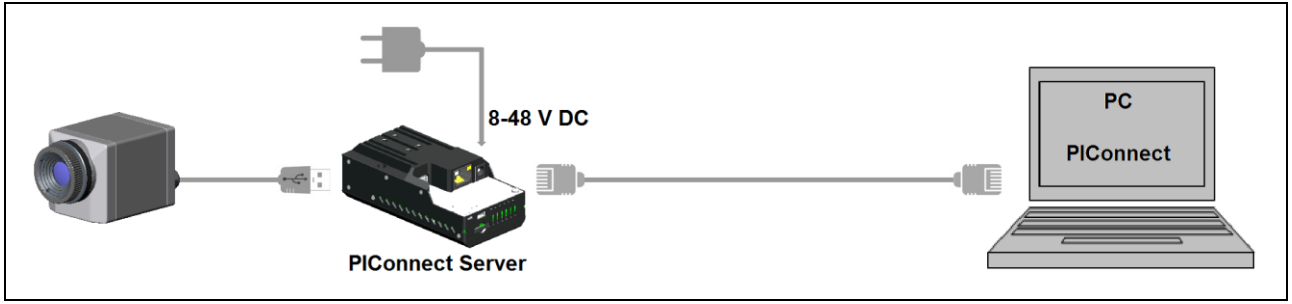
Status LEDs

The PI NetBox is equipped with 6 status LEDs (L1-L6).

LED	Function	LED lights up if…
L1	Power	NetBox is powered via PoE or by power supply (via power connector)
L2	Power out	NetBox is powered via PoE and (in this case) supplies 12V at the power connector
L3	Net data	video frames are continuously transmitted through the network connection (flashing)
L4	USB data	the imager is connected to an USB port, calibration files are loaded, and raw data frames are continuously delivered by the imager (flashing)
L5	Application OK	the main application (PIConnect or Imager Net Server) is running
L6	Mini USB port	a PC is connected to the mini USB port

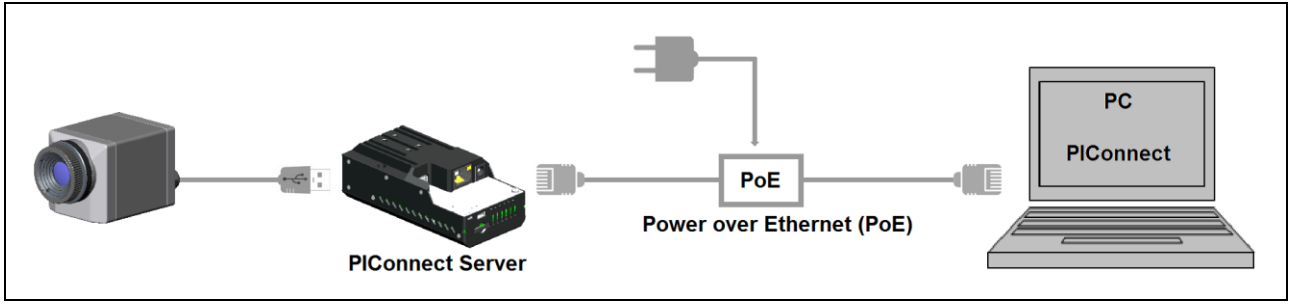
Ethernet Direct Communication

Please connect your imager with the supplied USB connection cable with the PI NetBox. Please connect your PC with an Ethernet cable with the NetBox. Now connect the power supply to the NetBox and to the mains. The NetBox will start to boot the system and should be ready to use after 2-3 minutes.
You can check the status with the LEDs. At proper functioning now L1 and L5 should light up.



Ethernet direct connection (point-to-point connection)/ PI NetBox powered via power supply

If you use a PoE injector the power supply for the NetBox is not needed. In this case please connect the PoE injector as shown in the drawing below. At proper functioning now L1, L2 and L5 should light up.
Follow the steps according chapter ► **Connection to a Network Device/ Point-to-Point Connection**.

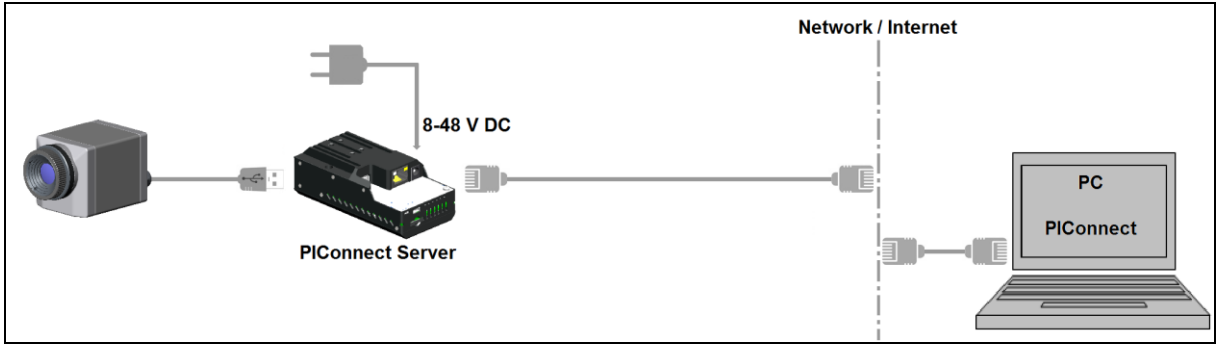


Ethernet direct connection (point-to-point connection)/ PI NetBox powered via PoE injector

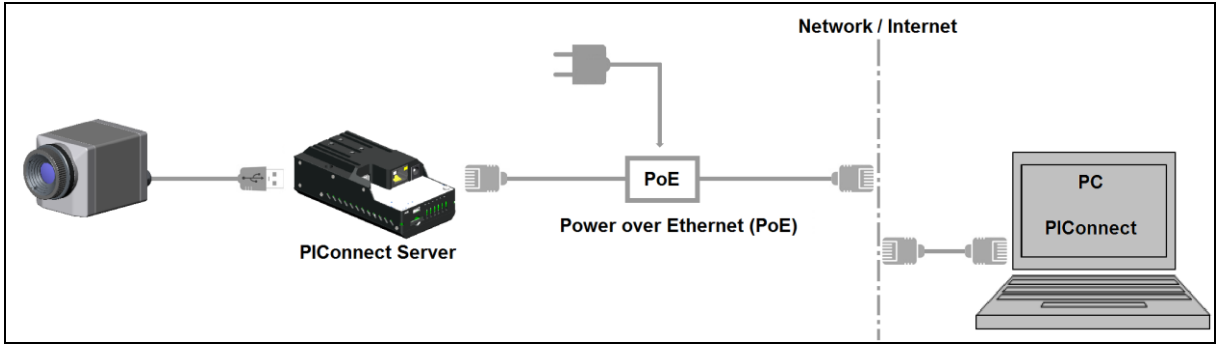
Ethernet Network Communication

Please connect your imager with the supplied USB connection cable with the PI NetBox. Please connect the Ethernet connection of the NetBox with a network or internet (via a router e.g.). Now connect the power supply to the NetBox and to the mains. The NetBox will start to boot the system and should be ready to use after 2-3 minutes.
You can check the status with the LEDs. At proper functioning now L1 and L5 should light up.

If you use a PoE injector the power supply for the NetBox is not needed. In this case please connect the PoE injector as shown in the drawing below. At proper functioning now L1, L2 and L5 should light up.
Follow the steps according chapter ► **Connection to a Network Device/ Ethernet network communication**.

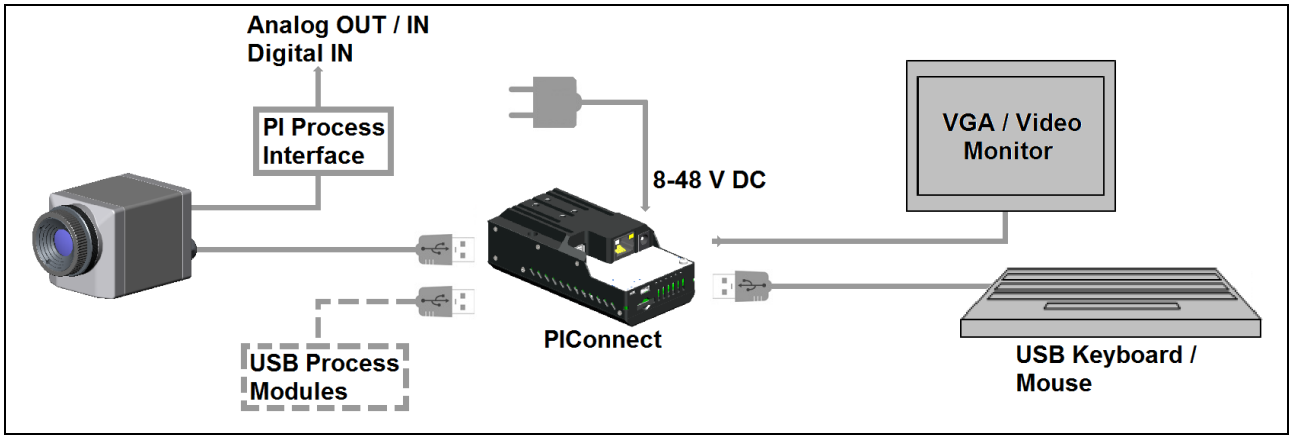


Ethernet network connection/ PI NetBox powered via power supply



Ethernet network connection/ PI NetBox powered via PoE injector

Stand-alone Operation

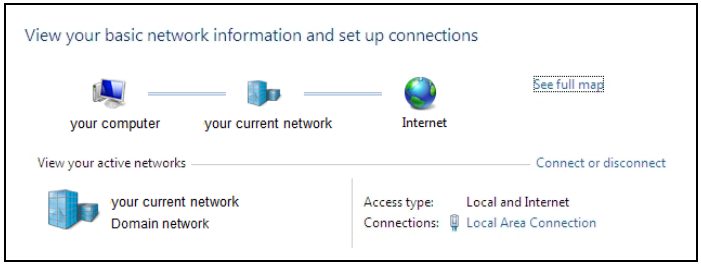


Connection to a Network Device

Point-to-Point Connection

The communication with the NetBox is done via the TCP/ IP protocol (**T**ransmission **C**ontrol **P**rotocol/ **I**nternet **P**rotocol). The NetBox can get its IP address (**I**nternet **P**rotocol address) either from a DHCP [1)] server or it can work with a fixed IP address.
On a direct connection to a PC both, the NetBox as well as the PC must use a fixed IP address because no DHCP server is available here. The NetBox is using in this case the IP address **168.0.100**. On your PC you have to do the following settings once (depending on the operating system the procedure can differ from the here shown – the following description refers to a Windows 7 system):

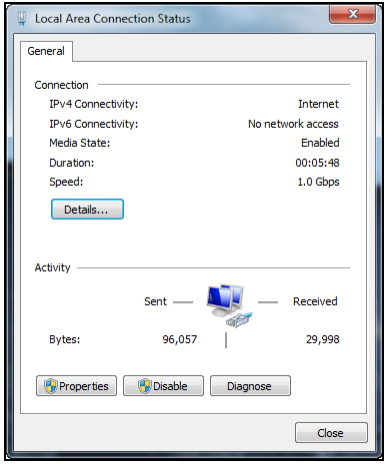
1. Go to **System controls**; open **Network and Sharing Center.**
2. If you have an existing connection to a network (company network e.g.) you should see the following information:

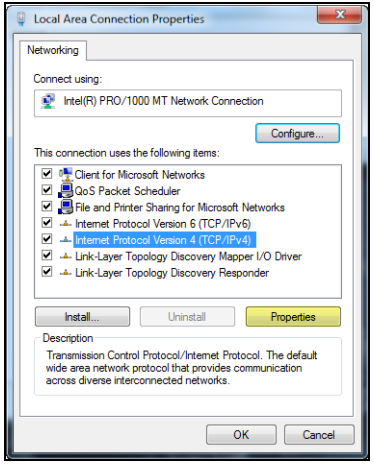


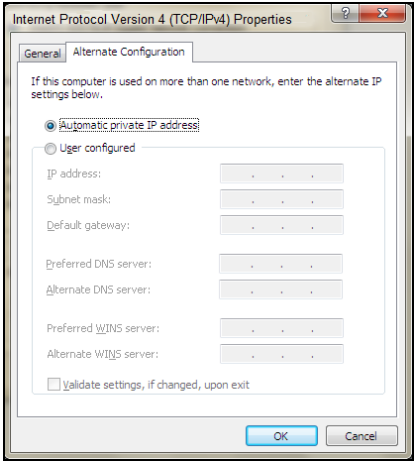
If your PC is not connected to any network, please go to **Change adapter settings** after you opened the **Network and Sharing Center**. Now go to **Local Area Connection**, right mouse button: **Properties**.
[continue at item 4]

[1)] DHCP – **D**ynamic **H**ost **C**onfiguration **P**rotocol: allows the automatic integration of a computer into an existing network.

3. Go to **Local Area Connection** – the following status screen will be shown. Then go to **Properties.**
4. Mark **Internet protocol Version 4 (TCP/IPv4)** and go again to **Properties**:

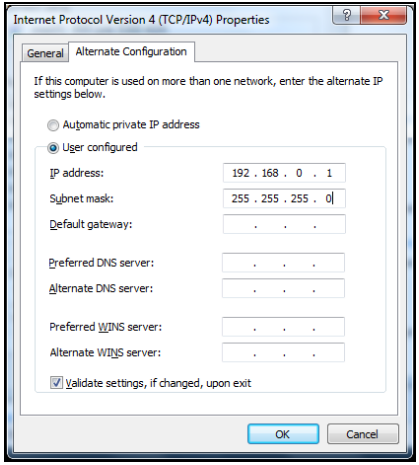






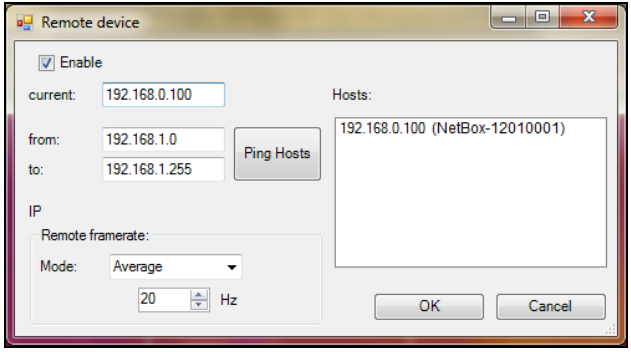
5. Please open now the register **Alternate Configuration** and activate the checkbox **User configured**.

6. Now you can enter a user defined IP address for your PC. Please take care that the network part of the address has to be identical with the network part of the IP address of the NetBox, thus **192.168.0**. For the host part you have to use an address which is different from the one of the NetBox (100), so you may use **1** for example.

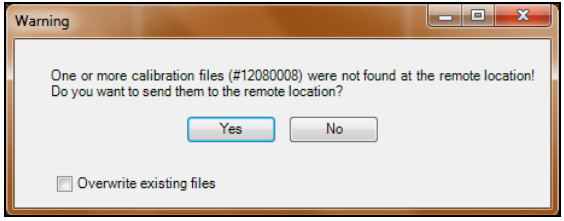


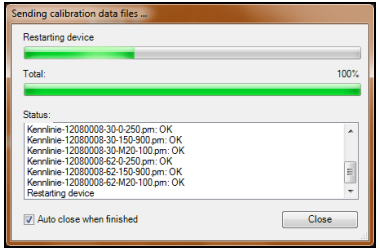
After you have made these settings and connected your PC with the NetBox using an Ethernet cable your PC will establish a point-to-point connection. This procedure can take several minutes.
In the **Network and Sharing Center** your network will now be shown up as a non-identified network.

Please start now the PIConnect on your PC and open the menu item **Tools/ Extended/ Remote devices...**. In the window which is appearing you should set a hook on **Enable** and enter the IP address of the NetBox (**192.168.0.100**) . Press OK. The software will establish a connection to the remote device (imager) automatically.



If the used imager is connected for the first time to the NetBox the following message appears:


Warning
One or more calibration files (#12080008) were not found at the remote location!
Do you want to send them to the remote location?
Yes
No
Overwrite existing files



Please confirm with **Yes**. The calibration files will be transferred automatically from your PC to the NetBox and stored there. Now you should see the live picture from the imager on your PC.